XII Chemistry target paper

Inorganic short question

- Determination of group period and block or general configuration of blocks
- How modern periodic law modify Mendeleev's periodic law
- State the laws classification such law of Triade, law of octave
- Explain position of hydrogen in periodic table
- Write five industrial preparation of hydrogen and how hydrogen is separated from water gas
- Explain isotopes of hydrogen
- Caster kellaner cell for manufacture for sodium hydroxide
- Nelson cell for Chlorine
- Explain properties of transition elements *melting point*variable oxidation State Complex formation *Catalytic property *magnetic properties
- Explain Color of complex in term of crystal theory
- IUPAC of complex from past paper
- Short note *tin plating *ligand *blue vitriol *lead pigment * allotropic from Sulphur *aqua regia *corrosion *silvering of mirror

Inorganic long question

- **Extraction of Al or extraction of Copper**
- **Contact process and nitric acid**
- **Ammonia solvay process**
- **Types of elements on the bases of electronic configuration**

Inorganic Important equation

PAST QUESTION PAPERS

(2019)

1) Complete & balanced equations for the following:

a) Saturated solution of soda ash treated with CO_2
$Na_2CO_3 + H_2O + CO_2 \rightleftharpoons 2NaHCO_3$

b) Action of super-heated water on boron nitride
$BN + 3H_2O \rightarrow H_3BO_3 + NH_3$

c) Reduction of sulphuric acid with hydrogen sulphide
$2H_2SO_4 + H_2S \rightarrow S + SO_2 + 2H_2O$

d) Reaction of sulphur dioxide with chlorine gas
$Cl_2 + SO_2 \rightarrow SO_2Cl_2$ (sulphuryl chloride)

e) Blue vitriol is heated to $230^{O}C$

f) $CuSO_4 \cdot 5H_2O \rightarrow CuSO_4 + 5H_2O$

2) Complete and balance the following equations:

a) $2H_2SO_4 + Zn \rightarrow ZnSO_4 + SO_2 + 2H_2O$
b) $Cl_2 + 2K_2MnO_4 \rightarrow 2KMnO_4 + 2KCl$
c) $K_2Cr_2O_7 + 2KOH \rightarrow 2K_2CrO_4 + H_2O$
d) $H_2SO_4 + HCOOH \rightarrow CO + H_2O \cdot H_2SO_4$
e) $2CuFeS_2 + 4O_2 \rightarrow Cu_2S + 2FeO + 3SO_2$

(2018)

1) Give complete & balanced equations for the following:

a) Action of NaOH on Carbon monoxide
$NaOH + CO \rightarrow HCOONa$

b) Action of concentrated nitric acid on Sulpher
$6HNO_3 + S \rightarrow H_2SO_4 + 2H_2O + 6NO_2$

c) Potassium manganate is treated with Chlorine
$Cl_2 + 2K_2MnO_4 \rightarrow 2KMnO_4 + 2KCl$

d) Coleminite is treated with Na_2CO_3 solution
$2Na_2CO_3 + Ca_2B_6O_{11} \rightarrow Na_2B_4O_7 + 2NaBO_2 + 2CaCO_3$

e) Action of hydrogen sulphide on Ferric chloride
$2Fe^{+3}Cl_3 + H_2S \rightarrow S + 2HCl + 2FeCl_2$

2) Complete and balance the following equations:

a) $H_2SO_4 + 2K_2CrO_4 \rightarrow K_2Cr_2O_7 + 4K_2SO_4 + H_2O$
b) $H_2SO_4 + C_6H_{12}O_6 \rightarrow 6C + 6H_2O.H_2SO_4$
c) $4FeO \cdot Cr_2O_3 + 7O_2 + 8K_2CO_3 \rightarrow Fe_2O_3 + 8K_2CrO_4 + 8CO_2$
d) $2CuSO_4 + 4KI \rightarrow Cu_2I_2 + 2K_2SO_4 + I_2$
e) $10HNO_3 + 4Mg \rightarrow 4Mg(NO_3)_2 + N_2O + 5H_2O$
f) $Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

(2017)

1) Give complete & balanced equations for the following:

a) Soda ash treated with silica

$Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$

b) Boric acid is treated with Sodium carbonate

$4H_3BO_3 + Na_2CO_3 \rightarrow Na_2B_4O_7 + 6H_2O + CO_2$

c) Litharge is heated with excess of air

$6PbO + O_2 \rightarrow 2Pb_3O_4$

d) Aluminium is treated with Caustic soda

$Al + NaOH + H_2O \rightarrow NaAlO_2 + \frac{3}{2}H_2$

2) Complete and balance the following equations:

a) $2CaOCl_2 + CO_2 + H_2O \rightarrow Ca(OH)_2 + 2Cl_2 + CaCO_3$

b) $Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

c) $6H_2SO_4 + K_2Cr_2O_7 + 4KCl \rightarrow 4KHSO_4 + 2CrO_2Cl_2 + 3H_2O$

d) $5HNO_3 + P \rightarrow H_3PO_4 + H_2O + 5NO_2$

e) $Sb_2S_3 + 6HCl \rightarrow 2SbCl_3 + 3H_2S$

f) $2H_2SO_4 + Zn \rightarrow ZnSO_4 + SO_2 + 2H_2O$

(2016)

1) Give complete & balanced equations for the following:

a) Concentrated H_2SO_4 with Oxalic acid

$H_2SO_4 + HCOOH \rightarrow CO + H_2O \cdot H_2SO_4$

b) Nitric acid with Sulpher

$6HNO_3 + S \rightarrow H_2SO_4 + 2H_2O + 6NO_2$

c) Fe^{3+} with Hydrogen sulphide

$2Fe^{+3} + H_2S \rightarrow S + 2H^{+} + 2Fe^{+2}$

d) Blue stone is treated with water

$2CuSO_4 + 4KI \rightarrow Cu_2I_2 + 2K_2SO_4 + I_2$

2) Complete and balance the following equations:

a) $2H_2SO_4 + K_2Cr_2O_7 \rightarrow 2KHSO_4 + 2CrO_3 + H_2O$

b) $6H_2SO_4 + K_2Cr_2O_7 + 4KCl \rightarrow 4KHSO_4 + 2CrO_2Cl_2 + 3HO$

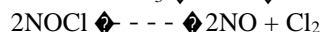
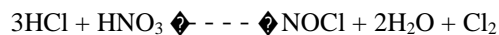
c) $4HNO_3 + 3Ag \rightarrow AgNO_3 + NO + 2H_2O$

d) $Cl_2 + 2K_2MnO_4$ - - - - $2KMnO_4 + 2KCl$

e) $6NaOH + 3Cl_2 \rightarrow 5NaCl + NaClO_3 + 3H_2O$

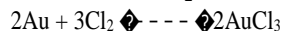
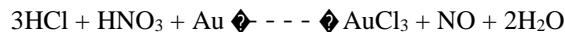
3) What is Aqua Regia? How does Gold dissolve in it? 1:3 volumes of conc. HNO_3 & HCl is called aqua Regia. It can dissolve Au as follows.

$3HCl + HNO_3 \rightarrow NOCl + 2H_2O + Cl_2$

$2NOCl \rightarrow 2NO + Cl_2$

The liberated Cl_2 reacts with Gold to form gold chloride.

$2Au + 3Cl_2 \rightarrow 2AuCl_3$

Overall reaction is

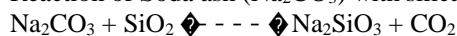
$3HCl + HNO_3 + Au \rightarrow AuCl_3 + NO + 2H_2O$

(2015)

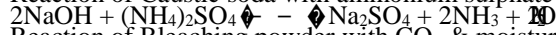
1) Give complete & balanced equations for the following:

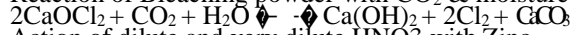
a) Reaction of Aluminium with concentrated H_2SO_4

$2Al + 6H_2SO_4 \rightarrow Al_2(SO_4)_3 + 6H_2O + 3SO_2$

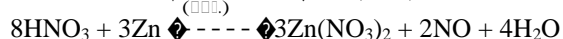
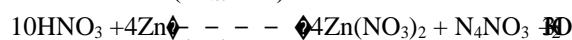
b) Reaction of Soda ash (Na_2CO_3) with silica

$Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$

c) Reaction of Caustic soda with ammonium sulphate

$2NaOH + (NH_4)_2SO_4 \rightarrow Na_2SO_4 + 2NH_3 + 2H_2O$

d) Reaction of Bleaching powder with CO_2 & moisture

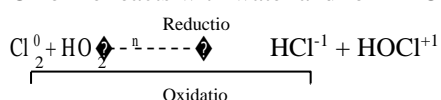
$2CaOCl_2 + CO_2 + H_2O \rightarrow Ca(OH)_2 + 2Cl_2 + CaCO_3$

e) Action of dilute and very dilute HNO3 with Zinc

$10HNO_3 + 4Zn \rightarrow 4Zn(NO_3)_2 + N_4NO_3 + 3H_2O$

$8HNO_3 + 3Zn \rightarrow 3Zn(NO_3)_2 + 2NO + 4H_2O$

f) Auto Oxidation – Reduction reaction of Chlorine

Chlorine reacts with water and form HCl and HOCl

Reduction

$Cl_2^0 + H_2O \rightarrow HCl^{-1} + HOCl^{+1}$

Oxidation

In HCl, 'Cl' reduces but in HOCl, 'Cl' oxidizes.

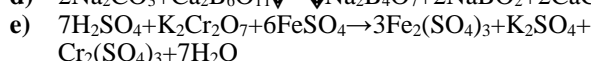
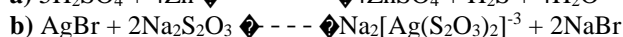
2) Complete and balance the following equations:

a) $5H_2SO_4 + 4Zn \rightarrow 4ZnSO_4 + H_2S + 4H_2O$

b) $AgBr + 2Na_2S_2O_3 \rightarrow Na_2[Ag(S_2O_3)_2]^{-3} + 2NaBr$

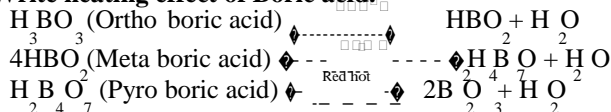
c) $5HNO_3 + P \rightarrow H_3PO_4 + H_2O + 5NO_2$

d) $2Na_2CO_3 + Ca_2B_6O_{11} \rightarrow Na_2B_4O_7 + 2NaBO_2 + 2CaCO_3$

e) $7H_2SO_4 + K_2Cr_2O_7 + 6FeSO_4 \rightarrow 3Fe_2(SO_4)_3 + K_2SO_4 + Cr_2(SO_4)_3 + 7H_2O$

3) Write heating effect of Boric acid.

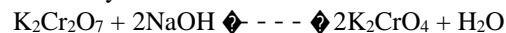
H_3BO_3 (Ortho boric acid) $\rightarrow HBO_2 + H_2O$

$4HBO_2$ (Meta boric acid) $\rightarrow H_2B_4O_7 + H_2O$

$H_2B_4O_7$ (Pyro boric acid) $\xrightarrow{\text{Red hot}} 2B_2O_3 + H_2O$

(2014)

1) Complete & balanced equations for the following:

a) Chrome yellow with Caustic soda

$K_2Cr_2O_7 + 2NaOH \rightarrow 2K_2CrO_4 + H_2O$

b) Oxidation of Potassium manganate with water

$2K_2MnO_4 + H_2O + [O] \rightarrow 2KMnO_4 + 2KOH$

c) Potassium Chromate with conc. Sulphuric acid

$H_2SO_4 + 2K_2CrO_4 \rightarrow K_2Cr_2O_7 + 4K_2SO_4 + H_2O$

d) Chromium oxide with KOH and Bromine water

$Cr_2O_3 + 10KOH + 3Br_2 \rightarrow 2K_2CrO_4 + 6KBr + 5H_2O$

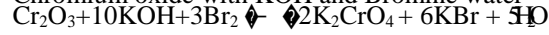
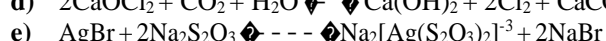
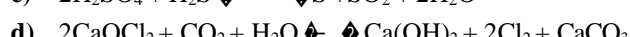
2) Complete and balance the following equations:

a) $5HNO_3 + P \rightarrow H_3PO_4 + H_2O + 5NO_2$

b) $8HNO_3 + 3Zn \rightarrow 3Cu(NO_3)_2 + 2NO + 4H_2O$

c) $2H_2SO_4 + H_2S \rightarrow S + SO_2 + 2H_2O$

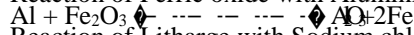
d) $2CaOCl_2 + CO_2 + H_2O \rightarrow Ca(OH)_2 + 2Cl_2 + CaCO_3$

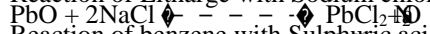
e) $AgBr + 2Na_2S_2O_3 \rightarrow Na_2[Ag(S_2O_3)_2]^{-3} + 2NaBr$

3

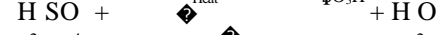
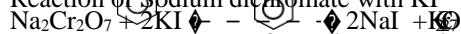
(2013)

1) Give complete & balanced equations for the following:

a) Reaction of Ferric oxide with Aluminium

$Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

b) Reaction of Litharge with Sodium chloride

$PbO + 2NaCl \rightarrow PbCl_2 + Na_2O$

c) Reaction of benzene with Sulphuric acid

$C_6H_6 + H_2SO_4 \xrightarrow{\text{Heat}} C_6H_5SO_3H + H_2O$

d) Reaction of Sodium dichromate with KI

$Na_2Cr_2O_7 + 2KI \rightarrow 2NaI + K_2Cr_2O_7$

2) Complete and balance the following equations:

a) $4FeO \cdot Cr_2O_3 + 7O_2 + 8K_2CO_3 \rightarrow Fe_2O_3 + 8K_2CrO_4 + 8CO_2$

b) $Cl_2 + 2K_2MnO_4 \rightarrow 2KMnO_4 + 2KCl$

c) $2CuSO_4 + 4KI \rightarrow Cu_2I_2 + 2K_2SO_4 + I_2$

d) $5H_2SO_4 + 4Zn \rightarrow 4ZnSO_4 + H_2S + 4H_2O$

e) $H_2SO_4 + MgCO_3 \rightarrow MgSO_4 + CO_2 + H_2O$

(2012)

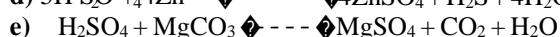
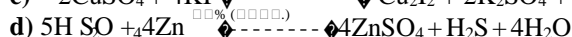
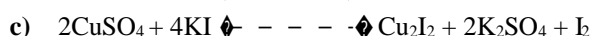
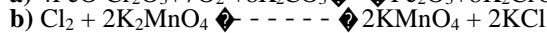
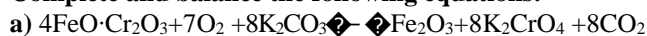
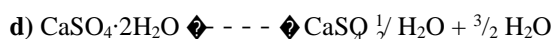
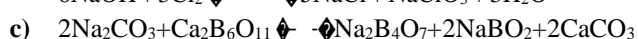
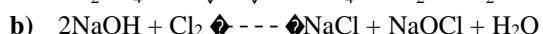
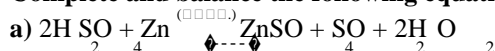
1) Complete and balance the following equations:

a) $2H_2SO_4 + Zn \rightarrow ZnSO_4 + SO_2 + 2H_2O$

b) $2NaOH + Cl_2 \rightarrow NaCl + NaOCl + H_2O$

$6NaOH + 3Cl_2 \rightarrow 5NaCl + NaClO_3 + 3H_2O$

c) $2Na_2CO_3 + Ca_2B_6O_{11} \rightarrow Na_2B_4O_7 + 2NaBO_2 + 2CaCO_3$

d) $CaSO_4 \cdot 2H_2O \rightarrow CaSO_4 \cdot {}^1/_2 H_2O + {}^3/_2 H_2O$

Important formula

PAST QUESTION PAPERS (2019)

1) Refer to the list of the given table:

COMPOUND	A	B	C	D
SPECIFIC NAME	CARNALITE	WATER GLASS	CORUNDUM	LUNAR CAUSTIC

i) Write the formula of ‘A’ and ‘C’. ii) Write the equation of the preparation of ‘B’.
iii) Write the equation for the reaction of ‘D’ to heat at 450^{O}C. iv) Give any one use of ‘D’.

(2018)

1) Refer to the list of the given table:

COMPOUND	A	B	C	D
SPECIFIC NAME	EPSOM SALT	PLASTER OF PARIS	BLEACHING POWDER	BAKING SODA

i) Write the formula of ‘A’ and ‘D’. ii) Write the equation of the preparation of ‘B’.
iii) Write the equation for the reaction of ‘C’ with HCl. iv) One common use of ‘B’.

(2017)

1) Refer to the list of the given table:

COMPOUND	A	B	C	D
SPECIFIC NAME	GYPSUM	BLEACHING POWDER	LUNAR CAUSTIC	POTASH ALUM

i) Write the formula of ‘B’ and ‘C’. ii) Write the equation of the preparation of ‘B’.
iii) Write the equation for the reaction of heating ‘A’ at 100^{o}C. iv) One common use of ‘D’.

(2016)

1) Write chemical formula of the following:
Suhaga Alunite Murda sang Chromite ore.

(2014)

1) Write chemical formula of the following:
Alunite Hypo Magnesite Fluorspar.

(2013)

1) Write chemical formula of the following:
Tincal Stibnite Carnalite Lead sesquioxide.

(2012)

1) Write chemical formula of the following:
Gypsum Suhaga Sandhur Litharge Lunar caustic Bleaching powder

(2010)

1) Write chemical formula of the following:
Plaster of Paris Baking soda Potash Alum Oleum

(2009)

1) Write chemical formula of the following:
Blue vitriol Oil of vitriol Epsom salt Gypsum Washing soda Phitkari

Organic Short

- **Definition from past paper**
- **Explain polymerization or isomerism**
- **Structure of ethane or ethyne with following equation *mustard gas *glycol from ethene *calcium carbide *1,2 dichoroethane with KOH*ethyne to red solid *ethyne to ethanal**
- **Explain electrophilic substitution of benzene *nitration *acetylation Chlorination* sulphonation or explain free radical mechanism of chlorination of methane**
- **IUPAC from past paper**
- **Give the reaction C2H5-I with the following *Na *Mg *alcoholic KOH**
- **Write the short note on *paint *Glass *detergent*fiber *enzyme *plastic**
- **What is Grignard reagent give its preparation and write reaction of Grignard with following *C2H5OH *CO2 *formaldehyde *ethanal *acetone**

organic long question

- **Molecular orbital structure of benzene or kekule structure of benzene along with objection or explain orientation of benzene prepare using benzene * m-nitro benzoicid * p-nitobenzoic acid *picric acid**
- **Explain SN1/Sn2 /E1/E2 mechanism with example**
- **Explain fermentation of starch and molasses**
- **Carbohydrate(complete) *vitamin completed**
- **Learnt the formula of the following**
  From book and past paper

Organic equation for long and short

*ethyne to benzene

*oxidation of ethyne with cold and hot $KMnO_4$

*Oxidation of benzene with Oxygen of Ozone

*Phenol from benzene

*phenol with HNO_3

*esterification

*ethanal from ethanol

*acetic acid to acid chloride

*cannizaro reaction

*formaldehyde to oxime

*formaldehyde to acetal

*Acetone with I_2 and Na_2CO_3

*acetone from calcium acetate

*Acid chloride to acid amide

* ethano with H_2SO_4

Distinguish Test

Aldehyde and ketone alkane And alkene alkyne and alkene

Alkane and alkyl halide

Best of luck

Regards Sir Farooq Ahmed MS in organic chem